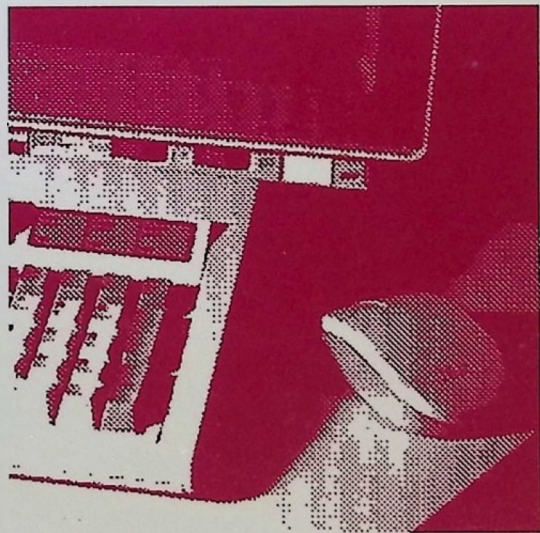


Personal System/2

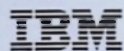
Solving Problems

PS/2 56, 57, and M57

PS/2 76, 77, and M77







Personal System/2

Solving Problems

PS/2 56, 57, and M57

PS/2 76, 77, and M77

Note!

Before using this information and the product it supports, be sure to read the general information under Appendix, "Notices" on page 65.

Third Edition (December 1992)

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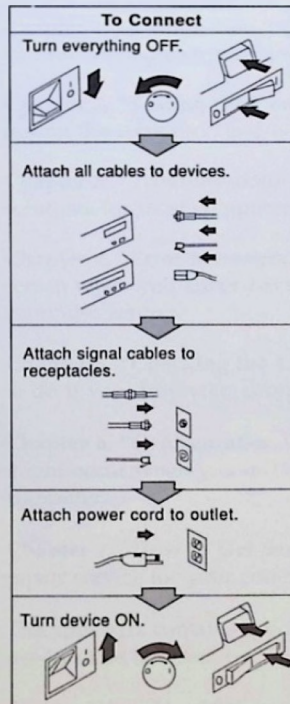
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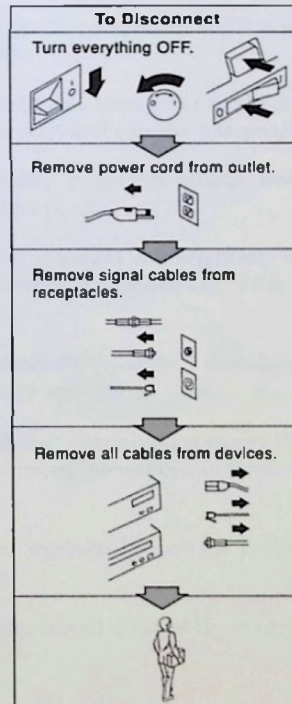


DANGER:

Electrical current from power, telephone, and communication cables is hazardous. To avoid shock hazard, connect and disconnect cables as shown below when installing, moving, or opening the covers of this product or attached devices. The power cord (also known as a power cable) must be used with a properly-grounded outlet.



Note: In the U.K., by law, the telephone cable must be connected after the power cord.



Note: In the U.K., by law, the power cord must be disconnected after the telephone line cable.

Problem		Solution	
Problem 1: The system will not boot.		Solution 1: Check the power supply and the system unit.	
Problem 2: The system will not boot.		Solution 2: Check the power supply and the system unit.	
Problem 3: The system will not boot.		Solution 3: Check the power supply and the system unit.	
Problem 4: The system will not boot.		Solution 4: Check the power supply and the system unit.	
Problem 5: The system will not boot.		Solution 5: Check the power supply and the system unit.	
Problem 6: The system will not boot.		Solution 6: Check the power supply and the system unit.	
Problem 7: The system will not boot.		Solution 7: Check the power supply and the system unit.	
Problem 8: The system will not boot.		Solution 8: Check the power supply and the system unit.	
Problem 9: The system will not boot.		Solution 9: Check the power supply and the system unit.	
Problem 10: The system will not boot.		Solution 10: Check the power supply and the system unit.	
Problem 11: The system will not boot.		Solution 11: Check the power supply and the system unit.	
Problem 12: The system will not boot.		Solution 12: Check the power supply and the system unit.	
Problem 13: The system will not boot.		Solution 13: Check the power supply and the system unit.	
Problem 14: The system will not boot.		Solution 14: Check the power supply and the system unit.	
Problem 15: The system will not boot.		Solution 15: Check the power supply and the system unit.	
Problem 16: The system will not boot.		Solution 16: Check the power supply and the system unit.	
Problem 17: The system will not boot.		Solution 17: Check the power supply and the system unit.	
Problem 18: The system will not boot.		Solution 18: Check the power supply and the system unit.	
Problem 19: The system will not boot.		Solution 19: Check the power supply and the system unit.	
Problem 20: The system will not boot.		Solution 20: Check the power supply and the system unit.	

This booklet contains information that will help you solve simple problems you might have with your computer. For more complex technical problems, you should seek the assistance of a trained service technician.

This booklet is organized as follows:

Chapter 1, "Introduction," describes the diagnostic tools available to you for solving computer problems.

Chapter 2, "Testing the Computer," describes what to check before testing the computer, and how to start and run the test programs.

Chapter 3, "Troubleshooting Charts," helps you quickly find solutions for most computer problems.

Chapter 4, "Error Messages," lists messages you might see on your screen when you either have a hardware problem or change the computer setup.

Chapter 5, "Checking the Computer for Damage," describes what to do if you drop your computer or spill liquid on it.

Chapter 6, "Configuration Conflicts," describes problems that might occur when you install incompatible options in your computer.

Chapter 7, "How to Get Service," explains how to get professional repair service for your computer.

The appendix contains special notices and a list of the trademarks used in this booklet.

See the *User's Handbook* for warranty information.

Related Publications

The following publications contain more information about your computer:

- *Setup*
(contains installation and setup instructions)
- *User's Handbook*
(contains general information about your computer)
- *Micro Channel Computer Reference*
(contains detailed information about micro-channel computers)
- *Installing Options*
(contains instructions for adding options to your computer)
- The IBM PS/2 Hardware Maintenance library and supplement for your model (separately-purchased publications for trained service technicians)

Computer problems can be caused by hardware, software, or a user error (an example of a user error is pressing the wrong key). You might be able to solve the problem yourself, or provide helpful information to a service technician.

You can check the hardware by using the test programs and this booklet. If the hardware is OK, and you have not made a user error, you might have a software problem. If you suspect that you have a software problem, refer to the information that came with that software package.

CAUTION:

The computer (system unit) with options might weigh as much as 12 kilograms (26 pounds). Be careful when moving or changing the position of the unit. Do not attempt to lift any object that you think is too heavy for you.

Start Here

If you are not familiar with the diagnostic tools and system programs, continue reading Chapter 1, then return here. If you are familiar with these topics, select the appropriate instructions from the list below:

- If you want to verify that the computer is operating correctly, go to Chapter 2, "Testing the Computer" on page 7.
- For more information about a hardware failure (for example, keys on the keyboard not working) or a screen prompt (for example, 0-1), go to Chapter 3, "Troubleshooting Charts" on page 13.
- To interpret an error message (for example, you have a 00021000 on the screen), go to Chapter 4, "Error Messages" on page 25.

Diagnostic Tools

The tools available to diagnose hardware-related problems are the:

- Power-on self-test (POST)
- Test the Computer program
- Advanced Diagnostic program
- Troubleshooting charts
- System error log
- Error messages

Descriptions of each of these tools follow.

POST

Each time you turn on the computer, it performs a series of tests that check the operation of the base computer and most options. This series of tests is called the *power-on self-test*, or *POST*. This test:

- Checks some basic system-board operations.
- Checks the memory operation.
- Compares the current system configuration with the stored system configuration information.
- Starts the video operation.
- Verifies that the diskette drive is working.
- Verifies that the hard disk drive is working.
- Verifies that the programs and information in the System Partition (on the hard disk) are present.

While the memory is being tested, the KB OK message and the amount of available memory appears in the top-left corner of your screen. On some models, numbers beginning with "CP" also appear in the lower-right corner of the screen. These numbers advance as the system progresses through POST. If POST finishes without detecting any problems, you hear one beep, and the first screen of your operating system or application program appears.

If POST detects a problem, an error message appears in the top-left corner of your screen. A single problem might cause several error messages to appear. When you correct the cause of the first error message, the other error messages probably will not appear on the screen the next time you turn on the computer.

System Diskettes and System Programs

A Reference Diskette and a Diagnostic Diskette were created when you made a backup copy of the *System Partition*. (The System Partition is a protected area of the hard disk. If you do not know how to make a backup copy of the System Partition, see the *User's Handbook*). The two diskettes together are referred to as the *system diskettes*.

These programs are used to configure and test the computer, and to restore and update the system programs. The programs on the backup system diskettes already are installed in the System Partition so you can run the system programs from the hard disk drive. The only time you need to use the backup system diskettes is when you cannot start the system programs from the hard disk drive.

The Test the Computer Program

The Test the Computer program is in the System Partition and on the Diagnostic Diskette. It is the primary method of testing the computer. The program is almost totally automatic, requiring minimal interaction from you. It can be used to test *all* IBM^{*} components of the computer, as well as the keyboard and some external devices. The amount of time required to test all components depends on the number of components. The more optional adapters and devices you have attached to your computer, the longer the testing takes.

If you cannot determine whether a problem is caused by the hardware or software, you can use the Test the Computer program to confirm that the hardware is working correctly.

* Trademark of the IBM Corporation.

The Advanced Diagnostic Program

The Advanced Diagnostic program is in the System Partition and on the Diagnostic Diskette, and is an *alternate* method of testing the computer. You might choose to run this program if you have several large storage devices attached, or if you are using the computer as a file server. The advanced diagnostic tests have some advantages and disadvantages:

Advantages: If you suspect a specific area of the computer is causing a problem, you can choose to test only that area of the computer. This will take less time than testing *all* of the components in the computer.

Disadvantages: The advanced diagnostic tests require more of your participation. You will be asked to answer **Yes** or **No** to questions about areas of the computer hardware or software. You might not be familiar with all the areas. These tests might indicate the failure is caused by a specific part, when actually an associated part caused the failure. For this reason, the advanced diagnostic tests are intended to be used by trained service technicians or very experienced users who can correctly interpret the advanced-diagnostic screen messages.

Troubleshooting Charts

The troubleshooting charts list symptoms of problems (maybe the *symptom* is "the mouse is not working"), as well as steps to correct the problem.

System Error Log

If you have a PS/2^{*} 56, 57, or M57, your computer automatically maintains a record of all memory and privileged-access password security errors that occur, and adds each one to the error log even if an error message is not displayed on the screen. This *system error log* is especially useful if you think there might be an intermittent

* Trademark of the IBM Corporation.

problem with your computer. Instructions for using the error log are provided online in the system programs.

Error Messages

Error messages that appear on the screen might be text, numeric, or both. There are three types of error messages:

POST error messages: Messages that appear if POST finds a problem.

Diagnostic error messages: Messages that appear if a problem is detected by either the Test the Computer program or the Advanced Diagnostic program.

Software-generated error messages: Messages that appear if a problem or conflict is detected by the application program, the operating system, or both. For an explanation of these messages, refer to the information that came with that software package.

Option Diskettes

Some optional devices and adapters come with a diskette. On the diskette are files the computer needs to recognize and activate that specific option. You can tell the purpose of the files by the file-name extension:

- ADF: Configuration files
- DGS: Diagnostic files
- PEP: Message files

All the files must be copied to the System Partition and the backup copy of the System Partition. You do this when you install the option, by selecting **Copy an option diskette** from the Main Menu of the system programs.

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All the files must be copied to the System Partition and the backup copy of the System Partition. You do this when you install the option, by selecting **Copy an option diskette** from the Main Menu of the system programs.

The test programs are designed to test *IBM* products only. Non-*IBM* products might present misleading error messages or unexpected computer responses. If you want to test a non-*IBM* product, refer to the information that came with it.

If the computer does not start when you press the power switch, check the following:

- Make sure that all cables are securely connected to the correct locations.
- Check to see if your computer has a voltage-selection switch, and the switch is set to the correct position. For additional information, see the *Setup* booklet.
- If your computer is a PS/2 56, 57, or M57, make sure the computer cover is properly installed. (A security feature on these models disables the power to the computer when the cover is removed.)

Before you can start the Test the Computer program, you must first start the system programs.

Starting the System Programs

You will be listening for a beep during this procedure. If your computer has a headphone jack and volume controls, make sure the volume controls are in the middle position, and the headphone cable is disconnected. If there is no beep, have the computer serviced.

To start the system programs, follow the instruction below for your computer model.

Notes:

1. If a power-on password or a privileged-access password is set the password prompt (P) appears on the screen. Type the passwords, then press **Enter** to continue.
2. If your computer is an LS (LAN station) model and *does not* have a hard disk or a diskette drive from which you can run the system programs, your network administrator must make the Diagnostics Diskette image available to your workstation. When

it is available, start the Diagnostic Diskette image, then go to "Checking the Computer Response" on page 8. (See the information about using the Diagnostic Diskette image in your *User's Handbook*, if you need instructions to start the image.)

PS/2 76, 77, and M77: Turn on the computer and listen for the beep. When you hear the beep, press and hold **Ctrl+Alt**; then press **Del**. Watch the cursor on the screen. When it moves to the upper-right corner, press and hold **Ctrl+Alt**; then press **Ins**. Go to "Checking the Computer Response."

PS/2 56, 57, and M57: Turn on the computer and watch the cursor on the screen. When it moves to the upper-right corner, press and hold **Ctrl+Alt**; then press **Ins**. Go to "Checking the Computer Response."

Checking the Computer Response

Find your computer response in the following table; then go to the section specified.

Computer Response	Go to:
Application program or operating-system program appears.	"Starting the System Programs" on page 7, and try to start the system programs again. If you still cannot start them, and you do not get an error message, run the Test the Computer program from the backup system diskettes (see "Using the Backup System Diskettes" on page 10).
System Programs Main Menu appears. -or- Diagnostic Diskette image messages appear on your workstation display (LS models only)	"Starting the Test the Computer Program" on page 9.
Blank screen, unreadable screen, or other response.	Chapter 3, "Troubleshooting Charts" on page 13.
POST error code or message appears.	Chapter 4, "Error Messages" on page 25.

Starting the Test the Computer Program

The Test the Computer program can be used to test the *entire* computer.

At the System Programs Main Menu, select **Test the computer**. Then, follow the instructions on the screen.

Note: If your computer has a headphone jack and volume controls, you can test the audio adapter by following the instructions in Chapter 3, "Troubleshooting Charts" on page 13.

After you start the Test the Computer program, if the computer stops during testing and you cannot continue, have the system unit and the keyboard serviced.

If testing does not find a problem, but you still have one, go to Chapter 3, "Troubleshooting Charts" on page 13, and look for the problem symptom.

Starting the Advanced Diagnostic Tests

The Advanced Diagnostic program is an alternate method of testing the computer; it is intended for experienced users and trained service technicians.

Note: Some of the tests ask if you want to use a *wrap plug*. A wrap plug is a diagnostic aid that is available from your IBM Authorized Dealer or Marketing Representative. If you do not have a wrap plug, answer **No** and continue.

1. Turn on the computer.
2. Start the system programs (as described in "Starting the System Programs" on page 7).
3. When the Main Menu appears, press and hold **Ctrl**; then press **A**. (This selects the advanced-diagnostic mode.)
4. When the Advanced Diagnostic Menu appears, select **System Checkout**. Then, follow the instructions on the screen to test one or more areas of the computer.

Using the Backup System Diskettes

The system programs stored in the System Partition also are on the backup system diskettes. (System diskettes are the Reference Diskette and the Diagnostic Diskette you created when you made a backup copy of the System Partition. If you do not know how to make a backup copy of the System Partition, see the *User's Handbook*).

When to Use the Backup System Diskettes: If you cannot start the system programs from the hard disk, you can start them from the backup system diskettes.

To Run the Test the Computer Program from the Backup System Diskettes:

1. Make sure the computer is off.
2. Insert the Reference Diskette in the primary diskette drive.
3. Turn on the computer.

Note: If the password prompt (P) appears on the screen, a privileged-access password, a power-on password, or both passwords are set. Type the correct password; then press **Enter** to continue.

4. When the Main Menu appears, select **Test the computer** and follow the instructions on the screen. (A message appears telling you to insert the Diagnostic Diskette.)

To Run the Advanced Diagnostic Tests from the Backup System Diskettes:

1. Make sure the computer is off.
2. Insert the Reference Diskette in the primary diskette drive.
3. Turn on the computer.

Note: If the password prompt (P) appears on the screen, a privileged-access password, a power-on password, or both passwords are set. Type the correct password; then press **Enter** to continue.

4. When the Main Menu appears, press and hold **Ctrl**; then press **A**. (A message appears telling you to insert the Diagnostic Diskette.)
5. After you insert the Diagnostic Diskette, the Advanced Diagnostic Main Menu appears. Select **System Checkout** and follow the instructions on the screen to test one or more areas of the computer.

Warning: During the advanced diagnostic testing, you have the option of formatting your hard disk. The advanced-diagnostic format program is called the *low-level format program*. It is different from the format program of the operating system in that the operating-system format program will not erase the System Partition; the advanced-diagnostic format program *will*. However, the program warns you about this before you continue with the format command. It will also erase the system programs and completely clear the hard disk.

Depending on the hard disk capacity, the low-level format program could take up to 2 hours.

Note: You cannot low-level format a hard disk from itself. You must perform a low-level format from a diskette drive or from another hard disk in your computer.

When To Run the Low-Level Format Program: There are three reasons to run this program:

- You are installing software that requires a low-level format.
- You get recurring messages from the diagnostic tests directing you to run the low-level format program on the hard disk.
- You want to try this as a last resort before replacing a failing hard disk drive.

Warning: The low-level format program erases *everything* from the hard disk. If the hard disk is working, make a backup copy of the System Partition and all the files on the hard disk before you continue. (If you do not know how to make a backup copy of the System Partition, see the *User's Handbook*). To back up all of your files, see your operating-system documentation.

To Run the Low-Level Format Program:

1. Turn on the computer.
2. Start the system programs (as described in "Starting the System Programs" on page 7).
3. When the Main Menu appears, press and hold **Ctrl**; then press **A**. (This selects the advanced-diagnostic mode.)
4. When the Advanced Diagnostic Menu appears, select **Format Hard Disk**. Then, follow the instructions on the screen.

Note: Hard disks normally contain more tracks than their stated capacity (to allow for defective tracks). A message appears on the screen if the defect limit is reached. If this happens, have the computer serviced.

Preparing the Hard Disk for Use: When the low-level format program is complete, restore all the files (that you previously backed up) to the hard disk. However, first you must:

1. Create the System Partition (if the hard disk drive previously had a System Partition). Use the Restore the System Partition program on the backup system diskettes.
2. Partition the remainder of the hard disk for your operating system. (The commands vary with the operating system. Refer to your operating-system manual for instructions.)
3. Format the hard disk using your operating system. (The commands vary with the operating system. Refer to your operating-system manual for instructions.)
4. Install your operating system.

You are now ready to reinstall your files.

You can use the troubleshooting charts in this chapter to find solutions to problems that have definite symptoms.

How to Use the Troubleshooting Charts

Look for your symptom in the left column of the chart. Instructions and probable solutions to your problem are in the right column of the chart.

If you are instructed to use the backup copy of the System Partition, insert the Reference Diskette first. (If you do not know how to make a backup copy of the System Partition, see the *User's Handbook*). If problems occurred before you were able to make a backup copy, have your system unit serviced.

In these charts, an "X" can be any alphanumeric character.

Audio Problems (Ultimedia* Models Only)

Action

Your audio adapter is not working correctly.

Run the audio adapter test program;

1. Go to the DOS window command prompt (full screen).
2. Type CD \DEVSUPP; then press Enter.
3. Type ACPADIAG; then press Enter.
4. Press Enter again to continue.
5. Follow the instructions on the screen.

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**Audio Problems
(Ultimedia* Models
Only)**

Action

Problems occur with one or more of the inputs or outputs.

Be sure all external cables are connected correctly and that external devices (microphones, headphones, amplifiers, and so forth) are working correctly.

Be sure that you do not have a conflict between the audio adapter configuration settings and those of another device in your computer. Use the **Set Configuration** program to view the input and output address and other configuration settings.

Run the audio adapter test program;

1. Go to the DOS window command prompt (full screen).
2. Type `CD \DEVSUPP`; then press **Enter**.
3. Type `ACPADIAG`; then press **Enter**.
4. Press **Enter** again to continue.
5. Follow the instructions on the screen.

If a problem still exists, have the system unit serviced.

**CD-ROM Drive
Problems (Ultimedia
Models Only)**

Action

Your CD-ROM drive is not working correctly.

Go to "Starting the System Programs" on page 7 to run the diagnostic tests. (Select **Test the computer** from the Main Menu.)

If a problem still exists, have the system unit serviced.

Diskette Drive Problems

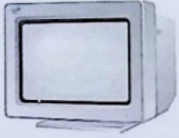
Action

Diskette drive In-Use light stays on, or the computer bypasses the diskette drive.

If there is a diskette in the drive, verify that:

1. The diskette is good and not damaged. (Try another diskette if you have one.)
2. The diskette is inserted correctly (label up and metal-shutter end first) in the drive.
3. The diskette contains the necessary files to start the computer.
4. Your software program is OK (see page 21).

If the diskette drive In-Use light stays on, or the computer continues to bypass the diskette drive, have the system unit serviced.

Display Self-Tests	Action
	Some IBM displays have their own self-tests. If you suspect a problem with your display: 1. Turn off the display and computer. 2. Disconnect the display signal cable from the computer. 3. Set the Contrast and Brightness controls to the center position. 4. Turn on the display. 5. Is the screen white in the center with some shading near the edges, and does it have a black strip on either one side, both sides, top, or bottom?
	Yes The display has successfully passed the self-test. Refer to the instructions supplied with your display for additional testing information. If you still have a problem with the display, and you have not already done so, check "Display Problems" below. If you still cannot find the problem, have the display and system unit serviced.
	No Refer to the instructions supplied with your display for further testing information.
Display Problems	Action
Wavy, unreadable, rolling, or distorted screen, or screen jitter.	If the display self-tests show the display is OK, consider the location of the display. Magnetic fields around transformers, appliances, fluorescent lights, or other displays can cause screen jitter, or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the display and move the device and the display at least 305 mm (12 in.) apart. (Moving a color display while it is turned-on might cause screen discoloration.) Turn the display on. <i>Note:</i> The distance between displays and diskette drives should be at least 76 mm (3 in.) to prevent diskette drive read/write errors. If the problem remains, have the display and system unit serviced.
The display works when you turn on the computer, but goes blank when you start some application programs.	Verify that the primary display cable is connected to the video connector. (See the <i>User's Handbook</i> to find the video connector.)

Display Problems	Action
Blank screen and no beep. Note: If you are not sure about the beeps, turn the computer off, then on again, and listen for the beep.	Verify that: 1. The computer power cord (also known as the "power cable") is plugged into a working electrical outlet and into the computer. 2. The cables connected to the computer are secure. (For information about where cables connect, see the <i>User's Handbook</i>.) 3. The computer and display power switches are on. 4. The speaker volume control (if you have one) is adjusted correctly. If the items above are correct and the screen remains blank, have the system unit serviced.
Blank screen and 1 beep.	Verify that: 1. The display power cord is connected to the display and to a working electrical outlet. 2. The display is turned on and the Brightness and Contrast controls are adjusted correctly. 3. The display signal cable is connected to the correct connector on the computer. (Some displays connect to an adapter in an expansion slot. To find the video connector, see the <i>User's Handbook</i>.) If the screen remains blank, run the display self-tests (see page 15). If those tests show the display is OK, have the system unit serviced.
Blank screen, continuous beep, or more than 1 beep.	Have the system unit serviced.
Only the cursor " " appears.	Have the system unit serviced.
Wrong characters appear on the screen.	Have the system unit serviced.
General Problems	Action
Problems such as broken cover locks or indicator lights not working.	Have the system unit serviced.

Intermittent Problems	Action
A problem occurs only occasionally and is difficult to detect.	Verify that: 1. All cables and cords are securely connected to the rear of the computer and attached options. 2. When the computer is turned on, air is flowing from the rear of the computer at the fan grill. If there is no air flow, the fan is not working. This causes the computer to overheat and shut down. 3. The last external device in each SCSI chain is terminated correctly. (See the <i>Installing Options</i> booklet for more information about SCSI terminators.) If the items above are correct, check the system error log (see "System Error Log" on page 22). If that does not solve the problem, the next time it occurs, make a note of what the problem is and what the computer is doing when the problem occurs. Then have the system unit serviced.

Keyboard, Mouse, or Pointing-Device Problems

	Action
All or some keys on the keyboard do not work.	You might have a password or the unattended start mode set. To use the computer, type the correct password and press Enter. If the password is not working correctly, have the system unit serviced. If you forget your power-on password, you can erase it by moving the power-on-password jumper on the system board. See the <i>Installing Options</i> booklet for the jumper location and instructions for moving the jumper. If you forget your privileged-access password, you cannot erase it. Have the system unit serviced. If no passwords are set, have the system unit, keyboard, and keyboard cable serviced.

Keyboard, Mouse, or Pointing- Device Problems	Action
The mouse or pointing-device does not work.	Verify that: 1. The mouse or pointing-device cable is securely connected and the device drivers are installed correctly. 2. The unattended start mode is not set. The unattended start mode disables the pointing-device port when the computer is turned on, and the device driver will not be loaded. <i>Note:</i> The pointing device port is also known as the auxiliary device port or mouse port. If the problem remains, have the system unit and the option serviced.
Option Problems	Action
An IBM option that was just installed does not work.	Verify that: 1. The option is designed for the computer. 2. The System Partition on the hard disk was updated with the information on the option diskette, if one was provided. (See the <i>User's Handbook</i> or the <i>Installing Options</i> booklet for more information.) 3. You followed the installation instructions supplied with the option. 4. The option is installed correctly. 5. You have not loosened any other installed options or cables. 6. The configuration information has been updated. To update the configuration information, select Run automatic configuration from the Set Configuration Menu in the system programs. If you are using an expanded- or enhanced-memory manager, such as the DOS Expanded Memory Specification (EMS) driver, go to Chapter 6, "Configuration Conflicts." If the test programs found no problem, have the system unit and the option serviced.

Option Problems	Action
An IBM option that used to work does not work now.	Verify that all of the option hardware and cable connections are secure. If the option came with its own test instructions, use those instructions to test the option. If the items above are correct and the test programs found no problem, have the system unit and option serviced. If the failing device is a SCSI device, verify that: 1. The cables for all external SCSI devices are connected correctly. 2. The last device in each SCSI chain is terminated correctly. (See the <i>Installing Options</i> booklet for more SCSI chain information.) 3. All external SCSI devices are turned on. External SCSI devices must be turned on before the computer. 4. After starting the system programs, the Enable and Disable settings are set correctly for all SCSI devices. See the <i>User's Handbook</i> for more information about these settings.
Printer Problems	Action
The printer does not work.	Verify that: 1. The printer is turned on and is online. 2. The printer signal cable is connected to the correct serial or parallel connector on the computer. (For the location of the serial or parallel connector, see the <i>User's Handbook</i>.) <i>Note:</i> Non-IBM printer cables might cause unpredictable problems. 3. You have assigned the printer port correctly in your operating system or application program. If the items above are correct and the printer still does not work, run the tests described in the printer manual. If the tests show the printer is OK, have the system unit serviced.

Screen Messages	Action
F1 and Diskette prompts —or— An 19990305 message 	Either an operating system could not be found or there is a diskette in drive A that must be removed. Remove any diskette in drive A and run the diagnostic tests to verify that the hard disk is working correctly. If there is a problem with the hard disk (such as a bad sector), you might have to reinstall the operating system.
Password prompt. 	A power-on password, a privileged-access password, or both passwords are set. To use the computer, type the correct password and press Enter. If the password is not working correctly, have the system unit serviced. If you forget your power-on password, you can erase it by moving the power-on-password jumper on the system board. See the <i>Installing Options</i> booklet for the jumper location and instructions for moving the jumper. If you forget your privileged-access password, you cannot erase it. Have the system unit serviced.
Error prompt —or— Any other information or message. 	Do the following: 1. Turn off the computer. 2. Insert the backup copy of the System Partition in the primary diskette drive. 3. Turn on the computer. 4. Follow the screen messages. When the Main Menu appears, select Test the computer. If you cannot get to the Main Menu, have the system unit serviced.

Software Problems	Action
Is your software program OK?	To determine if problems are caused by the software, verify that: 1. Your computer has the minimum memory requirements needed to use the software. Refer to the information supplied with the software to verify memory requirements. <i>Note:</i> If you have just installed memory, you might have a memory address conflict (see Chapter 6, "Configuration Conflicts" on page 61). 2. The software is designed to operate on your computer. 3. Other software works on your computer. 4. The software you are using works on another computer. If you received any error messages when using the software program, refer to the information supplied with the software for a description of the messages and solutions to the problem. If the items above are correct and the problem remains, contact your place of purchase or service technician for help.

System Partition Backup Copy Problems

	Action
Did you update the backup copy of your System Partition?	Always use the system programs on your hard disk, but also keep the backup copy of your System Partition updated. They both should contain the current configuration information and test programs for your computer. (See the <i>User's Handbook</i> for more information.) If the system programs are not current, the test programs might not find the problem. Some options come with an option diskette. Be sure to copy this diskette to the System Partition when you install the option, then back up the System Partition to diskettes. This option diskette contains the option test program and configuration information. If you installed an option, check its instructions to see if it came with an option diskette.

Note: If you cannot find your problem in the troubleshooting charts, go to "Starting the System Programs" on page 7 to test the computer. If you have already run the test program, or if running the test does not find the problem, go to "System Error Log" below and follow the instructions. (Only the PS/2 56, 57, and M57 use the error log.) If that does not solve the problem, have the system unit serviced.

System Error Log

If you have a PS/2 56, 57, or M57, your computer automatically maintains a record of all memory and privileged-access password security errors that occur, and adds each one to the error log even if an error message is not displayed on the screen. This is especially useful if you think there might be an intermittent problem with your computer.

If you ever require service on your computer, the information stored in the system error log can be very helpful to the servicer. If you clear the errors from the log, important service information also is cleared. Be sure you record the error-log information before you call for service. (If you change the hardware configuration of the computer, any errors associated with the changed hardware will be cleared from the error log.)

When you view the log, you can see the type of error, the number of times each error occurred, and the date and time of the most recent error. After 3 types of errors are logged, you will receive a 179 POST error code.

Notes:

1. If a power-on password or a privileged-access password is set the password prompt (P) appears on the screen. Type the passwords, then press Enter to continue.
2. If your computer is an LS (LAN station) model and *does not* have a hard disk or a diskette drive from which you can run the system programs, your network administrator must make the Reference Diskette image available to your workstation. When it is available, start the Reference Diskette image. (See the

information about using the Reference Diskette image in your *User's Handbook*, if you need instructions to start the image.)

To look at the error log:

PS/2 56, 57, or M57: Turn on the computer and listen for the beep. The beep generally occurs within forty-five seconds. Watch the cursor on the screen. When it moves to the upper-right corner, press and hold **Ctrl+Alt**; then press **Ins**, then continue with step 1.

1. At the Main Menu, select **More utilities**.
2. Select **Display system error log**.
3. Follow the instructions on the screen to view the logged errors. (Press **F8** to go forward and **F7** to go backward.) Go to the help screens for detailed information.

Error messages indicate that a problem exists; they are not intended to be used to identify a failing part. Troubleshooting and servicing of complex problems resulting in these error messages should be performed by a trained service technician.

System problems can result in two types of error messages – POST and diagnostic:

- POST error messages appear when POST finds problems with the hardware during startup, or when a change in the hardware configuration is found. POST error messages are 3-, 4-, 5-, 8-, or 12-character alphanumeric messages.
- Diagnostic error messages appear when a problem with a hardware option is found during diagnostic testing. These error messages generally consist of 8 digits.

Notes:

1. If you have a power-on password set, you must type the password and press Enter before POST will continue. For the PS/2 56, 57, or M57, if you have a privileged-access password set, you must type the privileged-access password and press Enter. Entering a power-on password in this case will display an error message.
2. Error messages for operating-system and software problems are generally text messages, but they also can be numeric messages. For information about these error messages, refer to the information that came with your operating system or application programs, or both.

POST Messages

The computer can display more than one error message. Usually, the first error to occur causes additional errors. Always follow the suggested action for the *first* error message that appears.

Note: The POST error messages on the following pages are all listed as 8-digit messages. In some cases your messages might appear as 3-, 4-, 5-, or 8-digit messages. When this occurs, add two zeros to the last digit and one, two, or three leading zeros before the first digit. This will allow you to look up the error message as an 8-digit number. If a 2-digit message appears, disregard it.

In some cases, error messages might appear as 12-digit messages. Disregard the last four digits. If a 2-digit message appears, disregard it.

Examples:

The following example shows a 5-digit error message that can appear on your screen. When this occurs, add two zeros to the last digit and one leading zero to make it an 8-digit message.

0 1 6 8 0 0 0
└──────────┘

The following example shows a 4-digit error message that can appear on your screen. When this occurs, add two zeros to the last digit and two leading zeros to make it an 8-digit message.

0 0 1 7 0 1 0 0
└──────────┘

The following example shows a 3-digit error message that can appear on your screen. When this occurs, add two zeros to the last digit and three leading zeros to make it an 8-digit message.

0 0 0 3 0 1 0 0
└──────────┘

Note: If a privileged-access password prompt (o-11) appears with a POST message, type the password; then press **Enter** to use the system programs.

In the following table, "X" can be any alphanumeric character.

POST Messages	Description
000101XX 000102XX 000103XX 000104XX 000105XX 000106XX 000107XX 000108XX 000109XX	A failure occurred during testing of the system board and microprocessor. <i>Action:</i> Have the system unit serviced.
000110XX	A memory parity failure occurred during testing of the system board. <i>Action:</i> Have the system unit serviced.
000111XX	An I/O channel check occurred during testing of the system board and memory. This failure is generally caused by an adapter. <i>Action:</i> Have the system unit serviced.
00011200	A watch-dog-timeout error occurred during testing of the system board. This failure is generally caused by an adapter. <i>Action:</i> Have the system unit serviced.
00011300	A bus arbitration-timeout error occurred during testing of the system board. This failure is generally caused by an adapter. <i>Action:</i> Have the system unit serviced.
00011400	An adapter ROM error occurred. <i>Action:</i> Have the system unit serviced.
00011500	A system-board ROM or DMA error occurred. <i>Action:</i> Have the system unit serviced.
00011600	A system-board port read/write error occurred. <i>Action:</i> Have the system unit serviced.
00011800	A system-board parity error occurred. <i>Action:</i> Have the system unit serviced.
00012000	A microprocessor error occurred. <i>Action:</i> Have the system unit serviced.
00012100	A system-board ROM-to-RAM copy error occurred. <i>Action:</i> Have the system unit serviced.

POST Messages	Description
00016000	The system-board ID was not recognized. <i>Action:</i> Have the system unit serviced.
00016100	The battery is dead. CAUTION: The lithium battery (IBM part number 33F8354) in your computer presents a fire, explosion, or severe burn risk. Use of another battery could result in ignition or explosion of the battery. The battery must be replaced by trained service personnel. <i>Action:</i> Until you have the system unit serviced, the computer can be used. However, you will have to run the Automatic Configuration program and set the time and date each time the computer is turned on.
00016300	The clock is not working correctly. <i>Action:</i> Set the correct date and time. If this does not correct the problem, have the system unit serviced. Until the system unit is serviced, the computer can be used, but any application programs that use the date and time will be affected.
00016400	A change in the memory configuration occurred. This error can be caused by adding memory, removing memory, or incorrectly installing memory. It also can occur if a defective memory kit is disabled. <i>Note:</i> The computer can be used with decreased memory capacity. <i>Action:</i> If you just installed memory, see the <i>Installing Options</i> booklet to verify that the new memory is correct for your computer. Running the diagnostic tests might isolate the location of the problem memory kit and provide additional information. If you have not just installed memory, have the system unit serviced.

POST Messages	Description
00016500	A change in the adapter configuration occurred. This error occurs under one or more of the following conditions: • A new adapter has been installed and the computer has not been configured. • One or more adapters were moved to a different slot. • An adapter is failing and is no longer recognized by the computer as being installed. • The adapter description file for an option diskette is missing from the System Partition. <i>Action:</i> Run the Automatic Configuration program if you just added, removed, or changed the location of an adapter. <i>Note:</i> If an adapter description file is missing, the Automatic Configuration program will identify the slot number of the unidentified adapter. Update the System Partition with the option diskette for that adapter. Select Copy an option diskette from the Main Menu to update the System Partition. If you did not add, remove, or change the location of an adapter, an adapter probably failed. Have the system unit serviced.
00016600	An adapter-busy error occurred. This error generally is caused by a failing adapter. <i>Action:</i> Have the system unit serviced.
00016700	The clock is not working correctly. <i>Action:</i> Set the correct date and time. If this does not correct the problem, have the system unit serviced. Until the system unit is serviced, the computer can be used, but any applications that use the date and time will be affected.
00016900	System board and processor card configuration mismatch. <i>Action:</i> If you have switched the processor or processor card and system board combination, run the Automatic Configuration
00017100 00017200	An error occurred during testing of the battery-backed memory that stores the configuration information. <i>Action:</i> Have the system unit serviced.
00017300	An error occurred in the battery-backed configuration information. <i>Action:</i> Run the Automatic Configuration program. If this does not resolve the problem, have the system unit serviced.

POST Messages	Description
00017400	A change in device configuration occurred. This error occurs under one or more of the following conditions: • A new device has been installed. • A device has been moved to a different location or cable connection. • A device has been removed. • A device is failing and is no longer recognized by the computer as being installed. • An external device is not turned on. <i>Action:</i> Verify that all external devices are turned on. External devices must be turned on before the computer is turned on. Run the Automatic Configuration program if you just added, removed, or changed the location of a device. If you did not add, remove, or change the location of a device, a device is probably failing. Running the Test the Computer program might isolate the failing device, but you must have the system unit serviced.
00017500	A hardware error occurred. <i>Action:</i> Have the system unit serviced.
00017600	The computer cover or the IBM PS/2 Cable Cover (if you have one) has been removed without a key being used. <i>Action:</i> Press Enter and follow the instructions on the screen to run the Automatic Configuration program.
00017700 00017800	A hardware error occurred. <i>Action:</i> Have the system unit serviced.
00017900	The error log stored in the battery-backed memory is full. <i>Action:</i> Start the system programs and display the error log. Use the Help screens to decide what action to take.

POST Messages	Description
00018100	The computer requires at least one of the following devices: • A network adapter that is enabled for remote program load (RPL). • A hard disk with an ID of 6 attached to the system board SCSI connector of a PS/2 56, 57, or M57. —or— • A hard disk with any ID attached to the system board SCSI connector of a PS/2 76, 77, or M77. Neither device was detected. <i>Action:</i> If you just installed either of these devices, run the Automatic Configuration program. If you have not installed either of these devices, run the Test the Computer program to determine the cause of the problem and what action to take.
00018200	A power failure damaged the privileged-access password information stored in your computer. <i>Action:</i> To restore the password, set the privileged-access switch to position 0 (change state). See the <i>Installing Options</i> booklet for more information.
00018300	A privileged-access password is set and must be entered. <i>Action:</i> To start the system programs, you must first enter the privileged-access password. <i>Warning:</i> You have only three chances to enter the password correctly. After three attempts, turn off your computer. Wait at least five seconds; then turn it on. You have three more chances to enter the password. If you cannot enter the correct password, have the system unit serviced.
00018400	The power-on password information stored in your computer was removed. <i>Action:</i> To restore this information, go to the Main Menu. Select Set features; then select Set password and unattended start mode.
00018500	A power failure damaged the stored information about the drive-startup sequence. <i>Action:</i> To restore this information, go to the Main Menu. Select Set features; then select Set startup sequence.
00018600	A system board or security hardware error occurred. <i>Action:</i> Have the system unit serviced.

POST Messages	Description
000187XX	The system identification information is invalid. <i>Action:</i> Start the system programs and follow the instructions on the screen to restore the system identification information. <i>Do not insert spaces in front of the system serial number.</i>
00018800	The system identification information was damaged and the computer will attempt to restore the information. <i>Action:</i> Follow the instructions on the screen. If this error continues to appear each time you turn on the computer, have the system unit serviced.
00018900	An attempt has been made to access the computer with invalid passwords. <i>Action:</i> To see the time, date, and number of invalid attempts, continue until the Main Menu appears. Select More utilities; then select Display System error log.
00020XXX 00021XXX	A failure occurred during the testing of memory. This error can be caused by incorrectly installed memory, a failing memory kit, or a system-board failure. <i>Action:</i> If you just installed memory, see the <i>Installing Options</i> booklet to verify that the new memory is correct for your computer and that it is installed correctly. Running the diagnostic tests might isolate the location of the problem memory kit and provide additional information. If you have not just installed memory, have the system unit serviced.
00022100	A failure occurred in the memory test. <i>Action:</i> Have the system unit serviced.
000225XX	An invalid memory configuration was detected. An unsupported type of memory kit is installed. <i>Action:</i> If you just installed memory, see the <i>Installing Options</i> booklet to verify that the new memory is correct for your computer. Running the diagnostic tests might isolate the location of the problem memory kit and provide additional information. If you have not just installed memory, have the system unit serviced.
00022600	A memory kit was installed in an incorrect connector. <i>Action:</i> Verify that the memory-module kits are installed in sequential order. For more information about installing memory-module kits see the <i>Installing Options</i> booklet.

POST Messages	Description
00030100 00030200 00030300 00030400 00030500	A failure occurred during testing of the keyboard and keyboard controller. <i>Action:</i> Make sure that nothing is resting on the keyboard and pressing a key. Verify that the keyboard cable is connected correctly to the keyboard and to the correct connector on the computer. <i>Note:</i> If you have just connected a new mouse or other pointing device, turn the computer off and disconnect that device. Wait at least five seconds; then turn the computer on. If the error message goes away, replace the device. If the error message remains, have the system unit, keyboard, and cable serviced.
00030600	An unsupported type of keyboard was detected. <i>Action:</i> If you just installed a keyboard, make sure it is designed for use with your computer. If you did not just install a keyboard, have the system unit and keyboard serviced.
00060100	A failure occurred during testing of the diskette drive and diskette-drive controller. This error can be caused by a loose or incorrectly connected cable, a failing drive, or a failing system board. <i>Action:</i> The computer can be used, but one or more diskette drives might not work. Running the diagnostic tests will isolate the diskette drive that is failing, but you must have the system unit serviced.
00060200	The computer is not able to start the diskette in the drive. The diskette might be damaged or incorrectly formatted. <i>Action:</i> Try another startable diskette.
00060400	An invalid type of diskette drive was detected by the tests. This computer supports only media-sense diskette drives, which sense the capacity of the diskettes. <i>Action:</i> If you just installed a diskette drive, verify that the new drive is a media-sense drive, and that all cables are connected correctly. If you did not just install a diskette drive, have the system unit serviced.

POST Messages	Description
00060500	A failure occurred during testing of a diskette drive. This error occurred when the system could not unlock the diskette drive for the insertion or removal of diskettes. <i>Action:</i> The computer can be used, and all diskette drives will work, but a diskette cannot be inserted into or removed from the locked drive. Running the diagnostic tests will isolate the diskette drive that is failing, but you must have the system unit serviced.
0011XXXX	A failure occurred during testing of the system-board serial port 1. <i>Action:</i> If you have a modem, serial printer, or other serial device attached to your computer, verify that the serial cable is connected correctly. If it is, use the following procedure: 1. Turn off the computer. 2. Disconnect the serial cable from serial port 1. 3. Turn on the computer. If the POST error message does not reappear, either the serial cable or the device is probably failing. See the information that came with the serial device for additional testing information. If the POST error message reappears, have the system unit serviced.
0012XXXX	A failure occurred during testing of the system-board serial port 2. <i>Action:</i> If you have a modem, serial printer, or other serial device attached to your computer, verify that the serial cable is connected correctly. If it is, use the following procedure: 1. Turn off the computer. 2. Disconnect the serial cable from serial port 2. 3. Turn on the computer. If the POST error message does not reappear, either the serial cable or the device is probably failing, have the cable and the device serviced. See the information that came with the serial device for additional testing information. If the POST error message reappears, have the system unit serviced.

POST Messages	Description
00240100	A failure occurred during testing of the video controller. This error can be caused by a failing display, a failing system board, or a failing video adapter. <i>Action:</i> Verify that the display is connected correctly to the video port. If so, have the display and system unit serviced.
0037XXXX	A failure occurred during testing of the SCSI devices. • The fifth position of the error message indicates the SCSI ID of the failing device. • The seventh position indicates the slot number of the failing adapter or the adapter supporting the failing device. (A zero (0) in this position indicates the system board instead of an adapter.) This error can be caused by one or more of the following: • A failing SCSI device (adapter, drive, controller) • An improper SCSI configuration • Duplicate SCSI IDs in the same SCSI chain <i>Action:</i> 1. Verify that the cables for all external SCSI devices are connected correctly. 2. Verify that the last device in each SCSI chain is terminated correctly. (See the <i>Installing Options</i> booklet for more SCSI chain information.) 3. Verify that all external SCSI devices are turned on. External SCSI devices must be turned on before the computer. 4. Start the system programs and verify that the Enable and Disable settings are set correctly for all SCSI devices. (See "Starting the System Programs" on page 7 for more information.) <i>Note:</i> The only time you need to use the backup system diskettes is when you cannot start the system programs from the hard disk. If the above are correct, running the diagnostic tests might provide additional information about the failing device. If the diagnostic tests do not find a problem and the POST error message remains, have the system unit serviced.

POST Messages	Description
00860100 00860200 00860300	A failure occurred during testing of the pointing device (mouse) and pointing device controller. This error can be caused by the pointing device or by a failing system board. <i>Note:</i> This error can also occur if electrical power was lost for a very brief period and then restored. In this case, turn off the computer for at least 5 seconds; then turn it on. <i>Action:</i> Ensure the keyboard and pointing device are attached to the correct connectors. If they are attached correctly, use the following procedure: 1. Turn off the computer. 2. Disconnect the pointing device from the computer. 3. Turn on the computer. If the POST error message does not reappear, the pointing device is probably failing. See the documentation that came with the pointing device for additional testing information. If the problem remains, have the pointing device serviced. If the POST error message reappears, run the diagnostic tests to isolate the failure. If the diagnostic tests do not find a problem and the POST error message remains, have the system unit serviced.

POST Messages	Description
0096XXXX or 0112XXXX	A failure occurred during testing of the SCSI devices. • The fifth position of the error message indicates the SCSI ID of the failing device. • The seventh position indicates the slot number of the failing adapter or the adapter supporting the failing device. (A zero (0) in this position indicates the system board instead of an adapter). This error can be caused by one or more of the following: • A failing SCSI device (adapter, drive, controller) • An improper SCSI configuration • Duplicate SCSI IDs in the same SCSI chain <i>Action:</i> 1. Verify that the cables for all external SCSI devices are connected correctly. 2. Verify that the last device in each SCSI chain is terminated correctly. (See the <i>Installing Options</i> booklet for more SCSI chain information.) 3. Verify that all external SCSI devices are turned on. External SCSI devices must be turned on before the computer. 4. Start the system programs and verify that the Enable and Disable settings are set correctly for all SCSI devices. (See "Starting the System Programs" on page 7 for more information.) <i>Note:</i> The only time you need to use the backup system diskettes is when you cannot start the system programs from the hard disk drive. If the above are correct, running the diagnostic tests might provide additional information about the failing device. If the diagnostic tests do not find a problem and the POST error message remains, have the system unit serviced.

POST Messages	Description
0109XXXX	A failure occurred while testing the ActionMedia[™] II Adapter/A. This error can be caused by: • Using the wrong type of cable • Improperly attached cables • A failing adapter <i>Notes:</i> 1. A 01091726 error message occurs if the extended memory window is disabled. You can correct this error by using the Change Configuration program to select a valid address for the ActionMedia II extended memory window. 2. A 01091729 error message occurs when an ActionMedia II adapter has a capture option installed and the ActionMedia II audio output is connected to the output of the Audio Capture and Playback adapter. This condition is normal and does not require any action. You can verify that this is the cause of the error message by disconnecting the audio cable from either adapter and restarting the computer. If the error message occurs with the cable disconnected, continue with the action below. <i>Action:</i> 1. Verify that the cables attached to the ActionMedia II Adapter are connected correctly. 2. Run diagnostic tests to isolate the problem. If the tests identify the adapter as the failure, have the system unit serviced.

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POST Messages	Description
01290200	A cache error occurred. Action: Run the diagnostic tests. • If the cache is failing, the diagnostic tests will disable it; however, the error will appear each time you turn on the computer. • If the cache error is intermittent, you are given the choice of enabling or disabling the cache. The computer can be used with the cache disabled.
0208XXXX to 0241XXXX	A failure occurred during testing of the SCSI devices. • The fifth position of the error message indicates the SCSI ID of the failing device. • The seventh position indicates the slot number of the failing adapter or the adapter supporting the failing device. (A zero (0) in this position indicates the system board instead of an adapter.) This error can be caused by one or more of the following: • A failing SCSI device (adapter, drive, controller) • An improper SCSI configuration • Duplicate SCSI IDs in the same SCSI chain Action: 1. Verify that the cables for all external SCSI devices are connected correctly. 2. Verify that the last device in each SCSI chain is terminated correctly. (See the <i>Installing Options</i> booklet for more SCSI chain information.) 3. Verify that all external SCSI devices are turned on. External SCSI devices must be turned on before the computer. 4. Start the system programs and verify that the Enable and Disable settings are set correctly for all SCSI devices. (See "Starting the System Programs" on page 7 for more information.) Note: The only time you need to use the backup system diskettes is when you cannot start the system programs from the hard disk drive. If the above are correct, running the diagnostic tests might provide additional information about the failing device. If the diagnostic tests do not find a problem and the POST error message remains, have the system unit serviced.

POST Messages	Description
199900X5	The computer cannot find a System Partition on the hard disk and cannot access the system programs from the Reference Diskette because a power-on password is set. <i>Action:</i> Erase the password by moving the power-on-password jumper on the system board. Use the instructions in the <i>Installing Options</i> booklet for removing an unknown power-on password. Then, restart the computer from the Reference Diskette.
199900X1 199900X2 199900X3 199900X4 199900X7 199900X8	The computer cannot start the system programs from the Reference Diskette in the drive. (If the Reference Diskette is not in the drive, see the following group of POST messages.) <i>Action:</i> Keep the diskette in the drive and restart the computer. If you receive the same error message, the programs on the diskette are either damaged or not the right version for the current hardware configuration. Try another copy of the diskette. If you do not have another copy and need to order one, see Chapter 7, "How to Get Service" on page 63 for ordering information.
1999001X 1999002X 1999003X 1999004X 1999007X 1999008X	The computer cannot access the system programs on the hard disk drive. (If this error occurred with the Reference Diskette in the diskette drive, see the previous group of POST messages.) <i>Action:</i> 1. Turn off the computer. 2. Insert the backup copy of the System Partition. 3. Turn on the computer. <i>Note:</i> If you see an 199900X5 error, a power-on password is set. You must erase the power-on password to clear this error, then restart the computer from the backup copy of the System Partition before continuing with the next step. To erase the power-on password, move the power-on-password jumper on the system board. See the <i>Installing Options</i> booklet for the jumper location and instructions for moving the jumper. 4. Select Backup/Restore system programs; then select Restore the System Partition. 5. When this procedure is complete, turn off the computer and remove the backup copy of the System Partition. 6. Turn on the computer. If the same error message appears, have the system unit serviced.

POST Messages	Description
1999005X	The computer cannot start the system programs from the Reference Diskette now in the drive. <i>Action:</i> Keep the diskette in the drive and restart the computer. If you receive the same error message, the programs on the diskette are either damaged or not the right version for the current hardware configuration. Try another copy of the diskette. If you do not have another copy and need to order one, see Chapter 7, "How to Get Service" on page 63 for ordering information.
1999006X	The computer cannot start the system programs from the hard disk. <i>Action:</i> 1. Turn off the computer. 2. Insert the backup copy of the System Partition. 3. Turn on the computer. 4. Select Set configuration from the Main Menu. 5. Select View configuration. 6. Determine if there are any conflicts. Each conflict is marked with an asterisk (*). <i>If there are conflicts, use the Change Configuration program to resolve them. Don't forget to save the changes before you restart the computer.</i> <i>If there are no conflicts, return to the Main Menu and select Test the computer to determine the cause of the error and what action to take.</i>
19990303	The computer cannot find the system programs. <i>Action:</i> See the action given for 1999001X.

POST Messages	Description
199903XX (except 19990303)	The computer cannot find the startup drive or an operating system on the startup drive. <i>Action:</i> 1. Turn off the computer. 2. Insert the backup copy of the System Partition. 3. Turn on the computer. 4. Select Set features from the Main Menu. 5. Select Set startup sequence. If you are unable to set the startup sequence, have the system unit serviced. 6. Check the list of devices on the Set startup sequence screen. If a CD-ROM drive is in the list of start-up devices, remove it from the list. A CD-ROM is not supported as a startup (<i>bootable</i>) drive. Is the drive you want to start from in the startup sequence? Yes Exit from this screen and the Main Menu, remove the backup copy of the System Partition, and turn off the computer. Wait at least five seconds; then turn the computer on. Continue with step 7. No Follow the instructions on the screen to add the default drive. 7. Is an operating system installed? Yes Go to step 9. No Install the operating system in your computer. 8. When the operating system is installed, turn off the computer. 9. Wait at least five seconds; then turn the computer on. If the same error message appears, have the system unit serviced.
Other Numbers.	The computer POST found an error. <i>Action:</i> Follow the instructions on the screen. If you do not get any instructions, have the system unit serviced.

If your medialess workstation is connected to a network, and your error message is not listed here, you might have a network problem. Go to "Network Messages" on page 45 to find the problem.

Diagnostic Messages

Diagnostic error messages for hardware-option problems generally consist of 8-digits.

To find the device related to these error messages, refer to Table 1 on page 44.

If your software does not require the use of the failing option, you can continue to use your computer. However, you will need to have the system unit and option serviced.

The following table of hardware-option error messages is not a complete list and should be used only for reference. Some error messages are not included and some options are not listed. The options that might not be listed are non-IBM hardware options or IBM hardware options that were released after this booklet was written.

In the following table, "X" can be any alphanumeric character.

Table 1. Diagnostic Error Messages

Messages	Related Function
0012XXXX	Dual Async Adapter/A
0014XXXX	Printer
0017XXXX	System Board (Hard Disk Controller)
002XXXXX	Memory Module Kit
0037XXXX	System Board SCSI
003XXXXX	Keyboard/Keyboard Cable/System Board
0046XXXX	Multiport/2 Adapter
0074XXXX	Display Adapter 8514/A
0086XXXX	Mouse/System Board
0096XXXX	SCSI Adapter (with cache)
0100XXXX	Multiprotocol Adapter/A
0101XXXX	Modem Adapter/A
0106XXXX	Ethernet Network Adapter
0107XXXX	5.25 Inch External Diskette Drive
0109XXXX	ActionMedia Adapter/A
0112XXXX	SCSI Adapter (without cache)
0129XXXX	Cache
0141XXXX	Real-Time Interface Coprocessor Portmaster Adapter/A
0152XXXX	XGA* Display Adapter/A
0164XXXX	120MB Internal Tape Drive
0165XXXX	6157 Tape-Attachment Adapter/Drive
0166XXXX	Token-Ring Network Adapter/A
0167XXXX	Token-Ring Network Adapter/A
0185XXXX	DBCS Japanese Display Adapter/A
0200XXXX	Image Adapter/A
0210XXXX	SCSI Hard Disk
0211XXXX	2.3GB SCSI Tape Drive
0215XXXX	SCSI CD-ROM Drive
0217XXXX	Rewritable Optical Drive
0243XXXX	XGA-2 Adapter Video
0258XXXX	XGA-2 System Board Video
0259XXXX	SVGA Display Adapter/A

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Network Messages

This section provides information about Token-Ring and Ethernet error messages.

Token-Ring Network Messages

The following tables represent possible error messages that might appear on the screen when a workstation is connected to the network.

Message	Action
ET—00:00:02 Field stops incrementing	If the elapsed time indicator stops incrementing, check to see that: • All cables and cords are connected correctly to the workstation. • The file server is operational. • The correct data rate is set for the Token-Ring Network Adapter. If the above items are correct, restart the workstation. If the problem remains, have the workstation serviced.
CE—0085 Field appears	This field indicates that a data-rate configuration error was found during POST. To continue, temporarily select the adapter data rate by pressing either F4 to select 4 Mbps or F6 to select 16 Mbps. To correct this error permanently, you must set the data rate for the Token-Ring Network Adapter. If the problem remains, have the workstation serviced.

Message	Action
BU—XXXX Field appears	This field indicates errors that occur during startup. If a code other than 0000 appears and the field is highlighted, an error has occurred. The following is a list of possible error messages: • 0022: The Token-Ring Network Adapter appears to be defective. Run the test programs on the Diagnostic Diskette image. If the problem remains, have the workstation serviced. • 0024: The shared RAM diagnostic test failed. Ensure that the RAM address assigned for the Token-Ring Network Adapter does not conflict with other devices installed in the workstation. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. • All others: The adapter appears defective. Have the workstation serviced.
OP—0000 XX Field appears flashing or in reverse video	If a code other than 0000 appears: • If the code is 0011 or 002D and the field is flashing: 1. Ensure that all cables and cords are connected correctly to the workstation and network-access point. 2. Ensure that the file server is available and fully operational. If the above items are correct, restart the workstation. If the problem remains, have the workstation serviced. • If the code is 002E and the field appears in reverse video, the adapter is configured for a different data rate than the LAN segment. The last 2 digits next to the OP- field (XX in the field shown) indicate the data rate currently set for the adapter. To temporarily correct this error: – If XX is 16, press F4 – If XX is 04, press F6. To correct this error permanently, you must change the data rate for the Token-Ring Network Adapter. Refer to the <i>LAN Reference</i> for instructions to change the system configuration. If the above items are correct and the problem remains, have the workstation serviced.

Message	Action
RQ—XXXX Field appears and XXXX is a value greater than 10	A number greater than 10 indicates that the file server is not present or is currently overloaded. 1. Ensure that the file server is available and fully operational. 2. Ensure that the address for the Token-Ring Network Adapter installed in the workstation has been added correctly to the network software. If the above items are correct and the problem remains, have the workstation serviced.
SF—XXXX Field appears and XXXX is a value greater than 10	A number greater than 10 indicates that the file server has been found, but is not responding. 1. Ensure that the file server is available and fully operational. 2. Ensure that the address for the Token-Ring Network Adapter installed in the workstation has been added correctly to the network software. If the above items are correct and the problem remains, have the workstation serviced.

Message	Action
RS—XXXX Field appears	If this field appears in reverse video with a code other than 0000, a ring error was detected. The following is a list of possible error messages where "X" can be any number: • 0040 or 0060: If the workstation is the only system connected to the LAN, restart the workstation. If other workstations are connected to the LAN, run the network Token-Ring Diagnostic tests. If the problem remains, have the workstation serviced. • 0080: One of the error-log counters has incremented past 256. Restart the workstation. • 04XX: The Token-Ring Network Adapter detected a hardware or software error. Run the test programs on the Diagnostic Diskette image. If the test programs find no errors and the problem remains, have the workstation serviced. • 08XX: The Token-Ring Network Adapter has a problem. Have the Token-Ring Network Adapter serviced. • 2000: The Token-Ring Network Adapter has found an error condition. Restart the workstation. • X1XX: The Token-Ring Network Adapter has been removed from the ring. Ensure that the correct adapter address was added to the network software. If the above address is correct and the problem remains, have the workstation serviced. • All other: Run the network Token-Ring Diagnostic tests. If the problem remains, have the workstation serviced.
PC—4020 Field appears	This field indicates that the adapter is not functioning correctly with the workstation. In most cases, the screen image will freeze, and this field will be highlighted because the adapter cannot communicate with the server. Restart the workstation. If the problem remains, have the workstation serviced.
AC—0040 0000 0000 Field appears	This field indicates that the adapter has detected an internal error. Restart the workstation. If the problem remains, have the workstation serviced.

Message	Action
AE—166 XX—0011 Field appears	This field indicates that the workstation contains two Token-Ring Network Adapters. The primary adapter shown here (166) could not establish communication with the file server. The reason is indicated by the XX message and can be either BU or OP. BU and OP were described previously on page 46. Restart the workstation. If the problem remains, have the failing Token-Ring Network Adapter serviced.

If you have reached this point and cannot find the problem, continue with "Token-Ring Adapter Messages" on the following page.

Token-Ring Adapter Messages

The following is a table of Token-Ring Network Adapter error messages that might appear in the top-left corner of the screen during POST. In this table, "X" represents a 6 (primary adapter) or a 7 (alternate adapter).

Message	Action
16X80	Invalid testing mode requested. Restart the workstation. If the problem remains, have the network adapter serviced.
16X81	The primary adapter was not found at the specified base I/O address. Ensure that a unique base I/O address was assigned to the adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. If a unique base I/O address was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.
16X82	The alternate adapter was not found at the specified base I/O address. Ensure that a unique base I/O address was assigned to the adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. If a unique base I/O address was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.
16X85	The adapter was not found at the specified base I/O address. Ensure that a unique base I/O address was assigned to the adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. If a unique base I/O address was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.
16X90	Adapter Card Test failure. Restart the workstation. If the problem remains, have the network adapter serviced.
16X91	Open Phase Test failure. Restart the workstation. If the problem remains, have the network adapter serviced.
16X92	Computer problem Go to "Starting the System Programs" on page 7.

Message	Action
16X93	Transmit/Receive Test failure. The data received is not the same as the data sent. Check to see that: 1. The network is terminated correctly. 2. The network is connected correctly. If the above items are correct, restart the workstation. If the problem remains, have the workstation serviced.
16X99	General error. Restart the workstation. If the problem remains, have the network adapter serviced.

If you have an Ethernet adapter installed, continue with the next page. If you do not have an Ethernet adapter installed, and you cannot find the problem listed here, go to Chapter 3, "Troubleshooting Charts" on page 13.

Ethernet Network Messages

The following tables represent possible error messages that might appear on the screen when the workstation is connected to the network.

Message	Action
ET—00:00:02 Field stops incrementing	If the elapsed time indicator stops incrementing, check to see that: 1. All cables and cords are connected correctly to the workstation. 2. The file server is operational. 3. The address for the network adapter was added correctly to the network software. If the above items are correct, restart the workstation. If the problem remains, have the workstation serviced.
CE—0085 Field appears	If a code other than 0000 appears, a configuration error was found during POST. Run the Automatic Configuration program on the Diagnostic Diskette image. Then ensure that a non-conflicting ROM address, RAM address, and interrupt level were assigned to the network adapter (refer to "Network Configuration Errors" on page 58 for additional information). If the problem remains, have the workstation serviced.

Message	Action
OP—XXXX Field appears	If a code other than 0000 appears, an error has occurred during startup. The following is a list of possible error messages: • 0001: The network adapter was not found. Check to see that: 1. The adapter is installed in the workstation. 2. All cables and cords are connected correctly to the workstation and network access point. 3. The file server is available and fully operational. If the above items are correct, restart the workstation. If the problem remains, have the workstation and network adapter serviced. • 0003: The shared RAM diagnostic tests failed. Ensure that the RAM address assigned for the network adapter does not conflict with other devices installed in the workstation. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. • 0004: The interrupt-request line for the network adapter was not found. Ensure that the interrupt level assigned to the network adapter does not conflict with other devices installed in the workstation. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. • 0005 or 0006: The adapter appears defective. Run the test programs on the Diagnostic Diskette image. If the problem remains, have the workstation and network adapter serviced.
RQ—XXXX Field appears and XXXX is a value greater than 10	If a number greater than 10 appears, the file server is not present or is currently overloaded. Check to see that: 1. The file server is available and fully operational. 2. The address for the network adapter was connected correctly to the network software. If the above items are correct and the problem remains, have the workstation serviced.
SF—XXXX Field appears and XXXX is a value greater than 10	If a number greater than 10 appears, the file server was found, but is not responding. Check to see that: 1. The file server is available and fully operational. 2. The address for the network adapter was connected correctly to the network software. If the above items are correct and the problem remains, have the workstation serviced.

Message	Action
ES—XXXX Field appears and remains on the screen	This field indicates the network status error messages. The following is a list of possible error messages: • 0001: The network adapter stopped the transmission because of excessive collisions. • 0002: The network interface controller cannot gain access to the bus. • 0004: The network adapter transmitted data without deferring. • 0008: The data transmitted from the network adapter collided, at least once, with another workstation's transmission. • 0010: The carrier sense was lost during transmission. • 0020: The multistation access unit (MAU) failed to transmit a collision signal after transmitting a packet. • 0040: An "out of window" (51.2-microsecond) collision occurred. • 0100: The receive buffer is full. • 0200: The frame size is too large to receive. • 0400: Packets were received with cyclic redundancy check (CRC) errors. • 0800: The incoming packet did not end on a byte boundary; therefore, the CRC did not match the last byte. • 1000: First-in, first-out (FIFO) is not serviced and is causing an overflow during reception. • 2000: A packet was missed because the receive buffers were full. These hexadecimal error messages all reflect soft-error conditions. Under normal circumstances, no action is required. When several of these errors occur simultaneously, they are ORed. For example, if errors 0001, 0002, 0004, and 0008 occur simultaneously, an error code of 000F appears. If the error code appears and remains on the screen: 1. Restart the workstation. 2. Ensure that you have not exceeded the number of devices that the network can support. If the problem remains, have the workstation serviced.

Message	Action
AC—0000 Field appears	This field indicates that the adapter has detected an internal error. • If the code is 0001, a soft error has occurred. Restart the workstation. • If the code is 0002, an unrecognized interrupt was found. Ensure that a unique interrupt level was assigned to the network adapter (refer to “Network Configuration Errors” on page 58 for additional information). If a unique interrupt level was assigned, restart the workstation. If the problem remains, have the workstation and network adapter serviced.

If you have reached this point and cannot find the problem, continue with “Ethernet-Adapter Messages” on the following page.

Ethernet-Adapter Messages

The following tables represent Ethernet-adapter error messages that might appear in the top-left corner of the screen during POST.

Message	Action
06402	The adapter was not found. Check to see that the adapter is installed correctly in the workstation. If so, restart the workstation. If the problem remains, have the workstation serviced.
06405	The adapter was not found at the specified base I/O address. Ensure that a unique base I/O address was assigned to the adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. If a unique base I/O address was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.
06406	ROM Test failure.
06416 —or— 06417	06406 LAN address ROM does not produce a valid checksum. 06416 Adapter erasable-programmable read-only memory (EPROM) signature is not valid. 06417 Adapter EPROM checksum is not valid. Check to see that a unique base ROM address was assigned to the network adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. If a unique ROM address was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.
06411	RAM Test failure. Ensure that a unique RAM address was assigned to the adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions. If a unique RAM address was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.
06412	Adapter Test failure. Restart the workstation. If the problem remains, have the network adapter serviced.

Message	Action
06418	Transmit/Receive Test failure.
06419	06418 Loopback first-in, first-out (FIFO) error.
06420	06419 Loopback packet error.
06421	06420 A cyclic redundancy check (CRC) character was expected but not generated.
06422	06421 Loopback error.
—or—	06422 A good CRC was manually appended to the loopback packet, but the network interface controller (NIC) logged a CRC error.
06424	06423 A bad CRC was manually appended to the loopback packet, but the NIC logged a CRC error.
	06424 A NIC accepted a packet whose address did not match that of the NIC.
The data received is not the same as data sent.	
Check to see that:	
1. The network is terminated correctly.	
2. The network is connected correctly.	
If the above items are correct, restart the workstation. If the problem remains, have the workstation serviced.	
06425	Interrupt not serviced.
Ensure that a unique interrupt level was assigned to the adapter. Refer to "Network Configuration Errors" on page 58 for additional information and instructions.	
If a unique interrupt level was assigned to the adapter, restart the workstation. If the problem remains, have the workstation serviced.	

If you have reached this point and cannot find the problem, go to Chapter 3, "Troubleshooting Charts" on page 13.

Network Configuration Errors

If an error occurs during testing of the network adapter, record the error message or number, then check to see that the network adapter is configured so that no conflicts exist. If a conflict exists, an asterisk (*) appears next to the parameter on the Change Configuration panel.

Use the Change Configuration program to check for conflicts and change them, if necessary. If you correct a conflict, run the test programs again.

Note: Conflicts with interrupt levels might not be indicated. Ensure that each device has a unique interrupt level assigned.

If the problem remains, have the workstation serviced.

Chapter 5. Checking the Computer for Damage

This chapter provides specific instructions on what to do if your computer gets damaged.

After Dropping It

If you dropped your computer, look for any obvious damage or loose cables. If there is obvious damage, have the computer serviced.

If the Computer Appears To Be OK: If there is no apparent damage, turn on the computer. If it works correctly, the computer probably did not suffer any damage. If it does not work correctly, an adapter or memory module might have been loosened. Go to the *Installing Options* booklet and follow the instructions for opening your computer; then reseal all adapters and memory modules (one at a time).

CAUTION:

Observe all safety and electrostatic precautions listed in the *Installing Options* booklet to avoid personal injury or damage to your computer.

If the Computer Still Does Not Work: Go to "Starting the System Programs" on page 7 to test the computer.

After Spilling Liquid on It

If Liquid Gets on the Keyboard:

1. Turn off the computer.
2. Unplug the keyboard from the back of the computer.
3. Turn the keyboard upside down to drain excess liquid.
4. Dry off the keyboard with a lint-free cloth.

After the keyboard is completely dry, plug it in and turn on the computer. If it does not work correctly, have the keyboard serviced.

If Liquid Gets Inside the Display:

1. Turn off the display.
2. Turn off the computer.
3. Unplug the display from the power source.
4. Have the display serviced immediately.

If Liquid Gets Inside the System Unit:

1. Turn off the computer and all attached devices.
2. Unplug the computer from the electrical outlet.
3. Have the system unit serviced immediately.

Configuration conflicts can occur because the Automatic Configuration program configures only the computer hardware. It does not consider the operating-system or application-program requirements.

Resolving Memory-Address Conflicts

The Automatic Configuration program could change the memory-address space used by some hardware options. If it does, the new address could conflict with addresses defined for use through expanded memory specification (EMS). (EMS is used only with DOS.)

If a memory conflict exists, one or more of the following might occur:

- The computer cannot load the operating system.
- The computer does not work.
- An application program does not operate, or it returns an error.
- Screen messages indicate that a memory-address conflict exists.

You can resolve memory-address conflicts by changing either the software configuration or the hardware configuration.

Correcting the Software Configuration Setup

The best way to resolve memory-address conflicts is to change the software configuration by changing the addresses that the EMS device driver defined. (The XGA-2 video memory occupies 8KB of space in the C0000 to DFFFF EMS memory area. EMS drivers must use addresses different from those assigned to video read-only memory (ROM). You can view or change the current setting for video ROM by using the Set Configuration program.

If the XMA2EMS or EMM386 device driver is causing the memory-address conflict, refer to your DOS documentation. For conflicts caused by device drivers supplied with application programs instead of those supplied with DOS, refer to the documentation supplied with the device driver.

Note: Start the system programs and use the Display Memory Map program to view the addresses used by your hardware and software options. (See the *User's Handbook* for more information.)

Correcting the Hardware Configuration Setup

An alternate way to resolve memory-address conflicts is to change the address of the conflicting hardware option by using the "Change Configuration" program.

To change the configuration information, select **Set configuration** from the Main Menu in the system programs; then select **Change configuration**. Identify the adapter using the addresses assigned for the EMS device driver; then set the adapter to a non-conflicting address.

Note: If you run the Automatic Configuration program after changing an address, the address you changed will be set back to its default (and possibly conflicting) value.

If your computer needs service, you can:

- Call an IBM-authorized service technician for on-site service.
- Take it to an IBM-authorized service center.
- Call your place of purchase.

Notes:

1. *If you are calling within the United States, you can call IBM for service at 1-800-IBM-SERV.*
2. *If you have questions about reinstallation or technical support of your Ultimedia system, call 1-800-241-1620.*
3. *If you need to order a replacement Reference Diskette and Diagnostic Diskette, call 1-800-845-4263.*
4. *If you have any other questions about your system, you can call the Personal Systems Customer Satisfaction Center at 1-800-PS2-2227.*
5. Outside the United States, contact your local IBM branch office or your place of purchase.

When you call for service, have your computer model, serial number, and error messages or problem information ready.

When getting service, describe the error message or problem to the service technician. Error messages help identify the service action required and help the service technician provide quick and efficient service to you.

For your convenience, write down local service phone numbers here:

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The first step in troubleshooting is to identify the problem. This involves asking the user what the problem is and when it started. Next, you should check the obvious things, like power and cables. If the problem persists, you should consult the user manual or a technical manual for more information. It is important to keep a record of the steps you have taken and the results. This will help you to identify the problem and find a solution.

Once you have identified the problem, you should try to reproduce it. This will help you to determine if the problem is intermittent or if it is always present. If the problem is intermittent, you should try to find out what conditions cause it to occur. If the problem is always present, you should try to find out what is causing it.

Isolating the Problem

Once you have identified the problem, you should try to isolate it. This involves testing different components of the system to see if they are causing the problem. For example, you might try to boot the system with different hardware configurations to see if the problem is caused by a specific component.

- 1. Check the power supply.
- 2. Check the cables.
- 3. Check the user manual.
- 4. Check the technical manual.
- 5. Keep a record of the steps you have taken.

By following these steps, you should be able to identify the problem and find a solution. It is important to be patient and thorough when troubleshooting. If you are still having problems, you should consult a professional technician.

Remember, the first step is to identify the problem. This involves asking the user what the problem is and when it started. Next, you should check the obvious things, like power and cables. If the problem persists, you should consult the user manual or a technical manual for more information.

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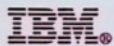
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